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Robot-assisted kidney transplantation (RAKT) from living donors using right- versus left-sided grafts: Results from the EAU Robotic Urology Section (ERUS)-RAKT working group

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Introduction & Objectives: RAKT from living donors (LD) is increasingly performed in selected centers with experience in robotic surgery and kidney transplantation (KT).
Of note, KT from LD using right-sided graft (RSG) is challenging due to the brevity of the right renal vein and has been associated with a higher risk of perioperative complications in selected series. In this scenario, RAKT may facilitate the performance of vascular anastomoses in case of short renal vessels thanks to the advantages of the robotic platform.
However, the evidence on the safety and feasibility of RAKT using RSGs is lacking.
The aim of this study is to compare the surgical and early perioperative outcomes after RAKT from LD using right- vs. left-sided grafts in a large prospective multicenter cohort (ERUS-RAKT working group).

Materials & Methods: After ethical committee approval, data from patients undergoing RAKT with regional hypothermia from LD using RSGs at 10 European referral centers between July 2015 and September 2019 were prospectively collected in a dedicated database. Patients undergoing RAKT using left-sided grafts (LSG) were used as controls.
RAKT was performed following the principles of the Vattikuti-Medanta technique.
Intraoperative outcomes and early (30d) post-operative complications (classified using the Clavien-Dindo classification), as well as functional results, were the main study endpoints.

Results: Overall, 291 RAKTs were performed during the study period. Of these, 15% were from RSG. The study groups were comparable regarding all donor-, recipient- and graft-related characteristics. Warm and cold ischemia times were also comparable between the two study groups.
The median times to complete venous and arterial anastomoses, as well as median rewarming time, were significantly higher during RAKT using RSG (23 vs. 19 min, p=0.001; 22 vs. 18 min, p<0.001 and 55 vs. 50 min p=0.001, respectively), while median time to complete the ureteral-vesical anastomosis and median estimated blood loss were comparable between the two groups. There was no difference between the two study groups regarding both the median 30 d-eGFR and the rate of perioperative surgical complications.
Conversely, RAKT using RSG was associated with lower 7 d-eGFR as compared to RAKT using LSG (47.2 vs 53.0 ml/min/1.73m2, p=0.013); yet, at multivariable analysis, kidney side was not significantly associated with worse 7d-eGFR.

Conclusions: Our preliminary experience outlines that RAKT using RSGs is technically feasible and may achieve noninferior early perioperative and functional outcomes as compared RAKT using LSGs.
Larger studies with longer follow-up are needed to confirm our findings.